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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,985	10/24/2003	Peter Wayte	126987/11915 (21635-0112)	1740
31450	7590	07/20/2006	EXAMINER	
MCNEES WALLACE & NURICK LLC 100 PINE STREET P.O. BOX 1166 HARRISBURG, PA 17108-1166			ALEXANDER, MICHAEL P	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 07/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/692,985	Applicant(s) WAYTE ET AL.	
	Examiner Michael P. Alexander	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 2,11,19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-10 and 12-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/30/06; 10/24/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim(s) 1-20 is/are pending.

Election/Restrictions

Applicant's election with traverse of Group I in the reply filed on 19 May 2006 is acknowledged. The traversal is on the ground(s) that (1) the limitation regarding 20 seconds is not found in the independent claims; (2) the product of claim 19 can only be made by the process of claim 1 because claim 19 recites "a forged titanium alloy article made from the process of claim 1"; and (3) there is no undue burden because a proper examination of the claims of Group I would require a search of all the groups.

This is not found persuasive because (1) there is no requirement that the limitation regarding 20 seconds must be found in the independent claims; (2) the patentability of a product does not depend on its method of production (see MPEP 2113); and (3) a proper examination of the claims of Group I would not require a search of alternate methods of achieving the same end result, which would be required for Group III, because the patentability of a product does not depend on its method of production.

The requirement is still deemed proper and is therefore made FINAL.

Claims 2, 11 and 19-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 19 May 2006.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-7, 10 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (0002) in view Beier (US 2001/0048019), Woodfield (US 2004/0089380), the ASM Handbook, Volume 4, and the website disclosure of the Titanium Metals Corporation found at www.timet.com/timetal6-4frame.html as archived by web.archive.org having been available to the public December 23, 2001.

Regarding claim 1, the applicant admits (see 0002 in the instant specification) as prior art a method for fabricating a forged titanium-alloy article, comprising the steps of: providing a workpiece made of a titanium alloy having a nominal composition in weight percent of 6 percent aluminum, 4 percent vanadium, 0.2 percent oxygen, balance titanium and impurities, wherein the titanium alloy would inherently have a beta-transus temperature; thereafter forging the workpiece to make a forged turbine engine

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component, wherein the forged turbine engine component has a thick portion thereof with a section thickness greater than 2-1/4 inches. The admission does not include the claimed heat treating steps nor the final machining step.

With respect to the heat treating steps in claim 1, Titanium Metals Corporation ("Timet") teaches (pages 1-2) heating treating a titanium alloy articles having section thicknesses up to four inches by solution heat treating the articles at a temperature from between 50 to 250 degrees F below the beta transus temperature, which overlaps with the claimed range, water quenching the article; and aging the article at a temperature of from 900 to 1100 degrees F, which overlaps with the claimed range. The Examiner notes that overlapping ranges are prima facie evidence of obviousness. See MPEP 2144.05 I. Although Timet does not explicitly specify a reason for solution treating and aging, the Examiner the motivation to applying solution treating and aging is implicit in the knowledge of one of ordinary skill in the art as evidenced by the ASM Handbook (see pages 916-917), which teaches substantially the same heat treating method without specifying section thickness and teaches that solution treating and aging of titanium alloys is a well known method of providing strength to titanium alloys while maintaining adequate ductility. It would have been obvious to one of ordinary skill in the art to modify the method of the admitted prior art by heat treating the forged turbine engine component at a temperature of from about 50 to 75 degrees F below the beta transus temperature, thereafter water quenching the forged turbine engine component to room temperature, and thereafter aging the forged turbine engine component at a temperature of from about 900 to 1000 degrees F in order to provide strength to

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titanium alloys while maintaining adequate ductility, the motivation being implicit in the knowledge of one of ordinary skill in the art as evidenced by the ASM Handbook.

Still regarding claim 1, Timet does not specify that the quenching would be to room temperature. However, Beier teaches (0010) quenching to room temperature in order to retain a maximum amount of alloying elements in solid solution prior to aging. It would have been obvious to one of ordinary skill in the art to modify the method of the admitted prior art in view of Timet by quenching to room temperature in order to retain a maximum amount of alloying elements in solid solution prior to aging as taught by Beier.

With respect to the step of final machining the forged gas turbine engine components in claim 1, Woodfield teaches (0012) final machining a forged turbine engine component in order to provide the final configuration and dimension to the component. It would have been obvious to one of ordinary skill in the art to modify the method of the admitted prior art in view of Timet and Beier by final machining a forged turbine engine component in order to provide the final configuration and dimension to the component as taught by Woodfield.

Regarding claims 3-4, the admitted prior art (see 0002 of the instant specification) teaches forging compressor disks, fan disks and gas turbine engine mounts.

Regarding claim 5, Timet does not specify the time of solution heat treating. However, the ASM Handbook teaches (Table 5) that Ti 6-4 alloy should be soaked for 1 hour in order to achieve the necessary solution treatment. It would have been obvious to one of ordinary skill in the art to modify the method of the cited prior art by soaking

the alloy for 1 hour in order to achieve the necessary solution treatment as taught by the ASM Handbook.

Regarding claim 6, Timet teaches (page 1 paragraph 2) immediately water quenching.

Regarding claim 7, Timet teaches (page 1 last paragraph) aging from 1 to 24 hours, which overlaps with the claimed range, which is prima facie evidence of obviousness. It would have been obvious to one of ordinary skill in the art to select the desired aging time from the aging times disclosed by Timet because Timet teaches the same utility throughout the disclosed range.

Regarding claim 10, see the rejection of claim 1 above. Furthermore, the Examiner asserts that the alloy of the admitted prior art in view of Timet, Beier, Woodfield and the ASM Handbook would inherently have the claimed yield strength at its centerline and below its surface because the alloy would have substantially the same composition and substantially the same processing. See MPEP 2112.01 I.

Regarding claims 12-16, see the rejections of claims 3-7 above.

Claims 8-9 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view Beier (US 2001/0048019), Woodfield (US 2004/0089380), the ASM Handbook, and the website disclosure of the Titanium Metals Corporation as applied to claims 1 and 10 above, and further in view of Bewlay (US 6,370,956).

Regarding claims 8-9 and 17-18, the cited prior art does not specify ultrasonic inspection. However, Bewlay teaches (abstract, col. 5 lines 60-67) ultrasonic inspection

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of forged titanium articles after forging and prior to any specified heat treatment.

Bewlay teaches (col. 1 lines 5-20) that the ultrasonic inspection detects flaws, grains, imperfections and other microstructural characteristics. It would have been obvious to one of ordinary skill in the art to modify the method of the previously cited prior art by ultrasonically inspecting the forged titanium articles after forging and prior to heat treatment in order to detect flaws, grains, imperfections and other microstructural characteristics as taught by Bewlay.

Citation of Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. AMS-T-9047 specification teaches (page 9) solution treating and aging Ti-6-4 articles having section thicknesses up to four inches.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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